AMENDMENTS TO THE CLAIMS

1. (Previously Presented) A communication system comprising a transmitter and a receiver, wherein

(a) the transmitter comprises:

a coding unit which codes data to be transferred;

a serial-parallel converting unit which performs serial-parallel conversion of the coded signal to two signal groups;

a first transmission unit which receives one of the serial-parallel converted signal groups; and

a second transmission unit which receives an other one of the serial-parallel converted signal groups;

each of the first transmission unit and the second transmission unit including:

a prephasing unit which performs a prephasing process on each of signals included in the input signal group received;

an inverse Fourier transform unit which performs inverse Fourier transform on signals originating from the prephasing process; and

a transmitting unit which transmits the inverse Fourier transformed signal with a predetermined polarization, and wherein,

a polarity of the predetermined polarization of the first transmission being orthogonal to a polarity of the predetermined polarization of the second transmission unit,

(b) the receiver comprises:

a receiving unit which receives a signal transmitted from the transmitter with a predetermined polarization;

a Fourier transform unit which performs Fourier transform on the received signal;

a detection unit which performs MLD (Maximum Likelihood Detector) detection of signals originating from the Fourier transform;

a parallel-serial converting unit which performs parallel-serial conversion on the MLD detected signals; and

a decoding unit which decodes a signal originating from the parallel-serial conversion to output the transferred signal, and

(c) the receiver generates feedback information for the prephasing process in the transmitter, and sends the feedback information to the transmitter,

the transmitter performs the prephasing process on each of the signals based on the feedback information sent from the receiver in such a way that a probability that a same phase is generated becomes lower, and

the range of the phase control in the prephasing process is about 10 degrees.

2. (Original) The communication system according to 1, wherein each of the first transmission unit and the second transmission unit of the transmitter multiplexes the input signals received and a pilot signal, performs serial-parallel conversion on a signal originating from the multiplexing, and performs a prephasing process on signals originating from the serial-parallel conversion, instead of performing a prephasing process on the input signals received.

3. (Original) A transmitter in the communication system as set forth in claim 1 or 2.

4. (Original) A receiver in the communication system as set forth in claim 1 or 2.

5. (Previously Presented) A transmitting method comprising:

a coding step which codes data to be transferred;

a serial-parallel converting step which performs serial-parallel conversion of the coded signal to two signal groups;

a first transmission step which receives one of the serial-parallel converted signal groups; and

a second transmission step which receives an other one of the serial-parallel converted signal groups;

each of the first transmission step and the second transmission step including:

a prephasing step which performs a prephasing process on each of signals included in the input signal group received;

an inverse Fourier transform step which performs inverse Fourier transform on signals originating from the prephasing process; and

a transmitting step which transmits the inverse Fourier transformed signal with a predetermined polarization, and wherein,

a polarity of the predetermined polarization of the first transmission being orthogonal to a polarity of the predetermined polarization of the second transmission step,

the prephasing step performing the prephasing process on each of the signals based on feedback information sent from a receiver in such a way that a probability that a same phase is generated becomes lower, and

the range of the phase control in the prephasing process is about 10 degrees.

6. (Original) The transmitting method according to 5, wherein each of the first transmission step and the second transmission step multiplexes the input signals received and a pilot signal, performs serial-parallel conversion on a signal originating from the multiplexing, and performs a prephasing process on signals originating from the serial-parallel conversion, instead of performing a prephasing process on the input signals received.

7. (Previously Presented) A receiving method comprising:

a receiving step which receives a signal transmitted from a transmitter with a predetermined polarization;

a Fourier transform step which performs Fourier transform on the received signal;

a detection step which performs MLD (Maximum Likelihood Detector) detection of signals originating from the Fourier transform;

a parallel-serial converting step which performs parallel-serial conversion on the MLD detected signals; and

a decoding step which decodes a signal originating from the parallel-serial conversion to output the transferred signal,

wherein feedback information for a prephasing process in the transmitter is generated and sent to the transmitter, and

the range of the phase control in the prephasing process is about 10 degrees.

8. (Currently Amended) A computer-readable information medium storing a program which allows a computer to function as the transmitter in the communication system as set forth in claim 1 or 2.

9. (Currently Amended) A computer-readable information medium storing a program which allows a computer to function as the receiver in the communication system as set forth in claim 1 or 2.